

Collaborative R&D: Maintaining the Nuclear Fleet & Advanced Reactor Technology

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About EPRI

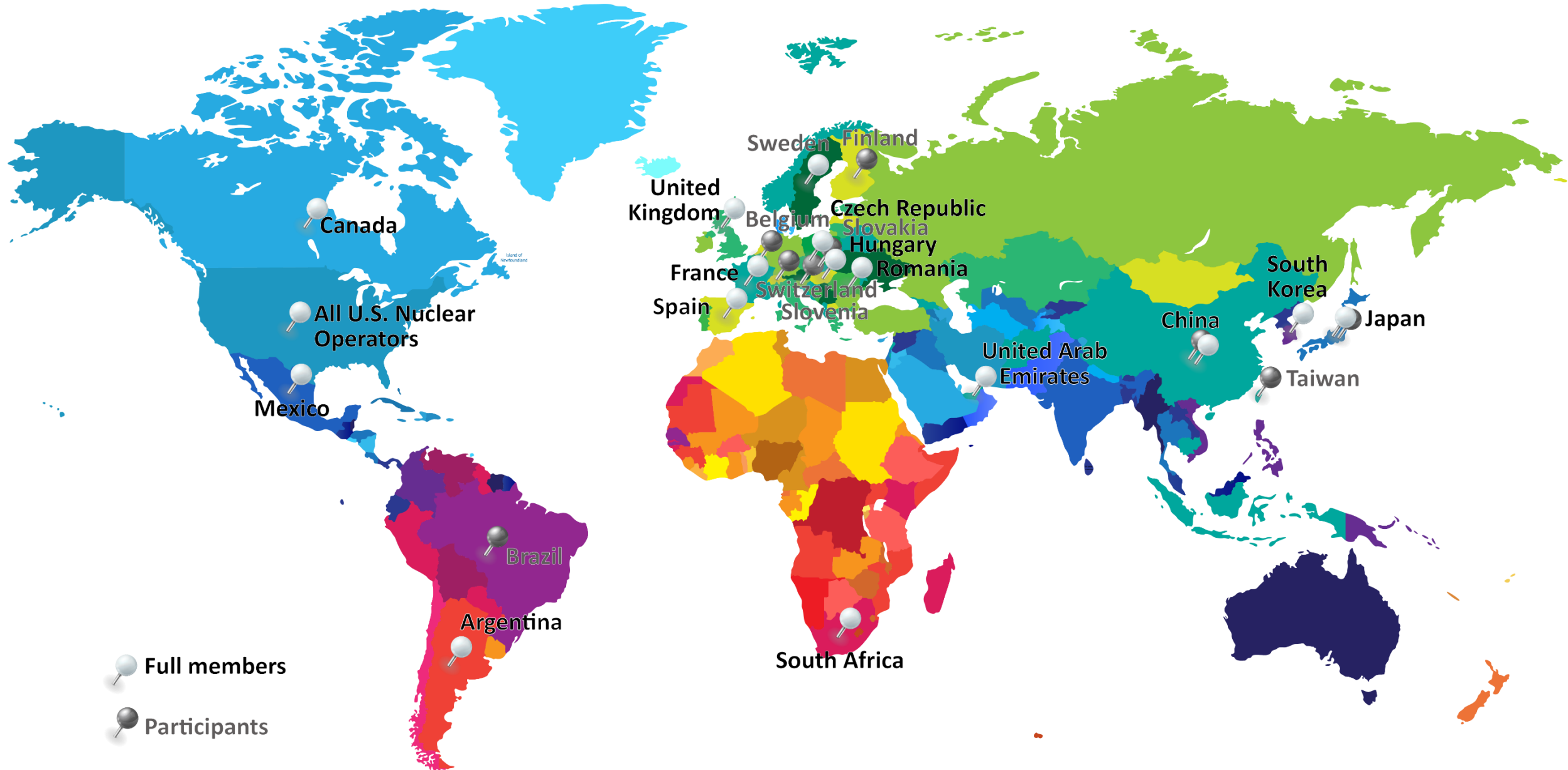
- Independent, nonprofit center for public interest energy and environmental research
- Collaborative resource for the electricity sector
- Offices in California, North Carolina, Tennessee; laboratories in North Carolina, Tennessee, Massachusetts
- 450+ participants in more than 30 countries



RESEARCH AREAS



The countries our Nuclear Sector serves



Core Drivers



Maximize
the safe utilization of
existing nuclear
assets

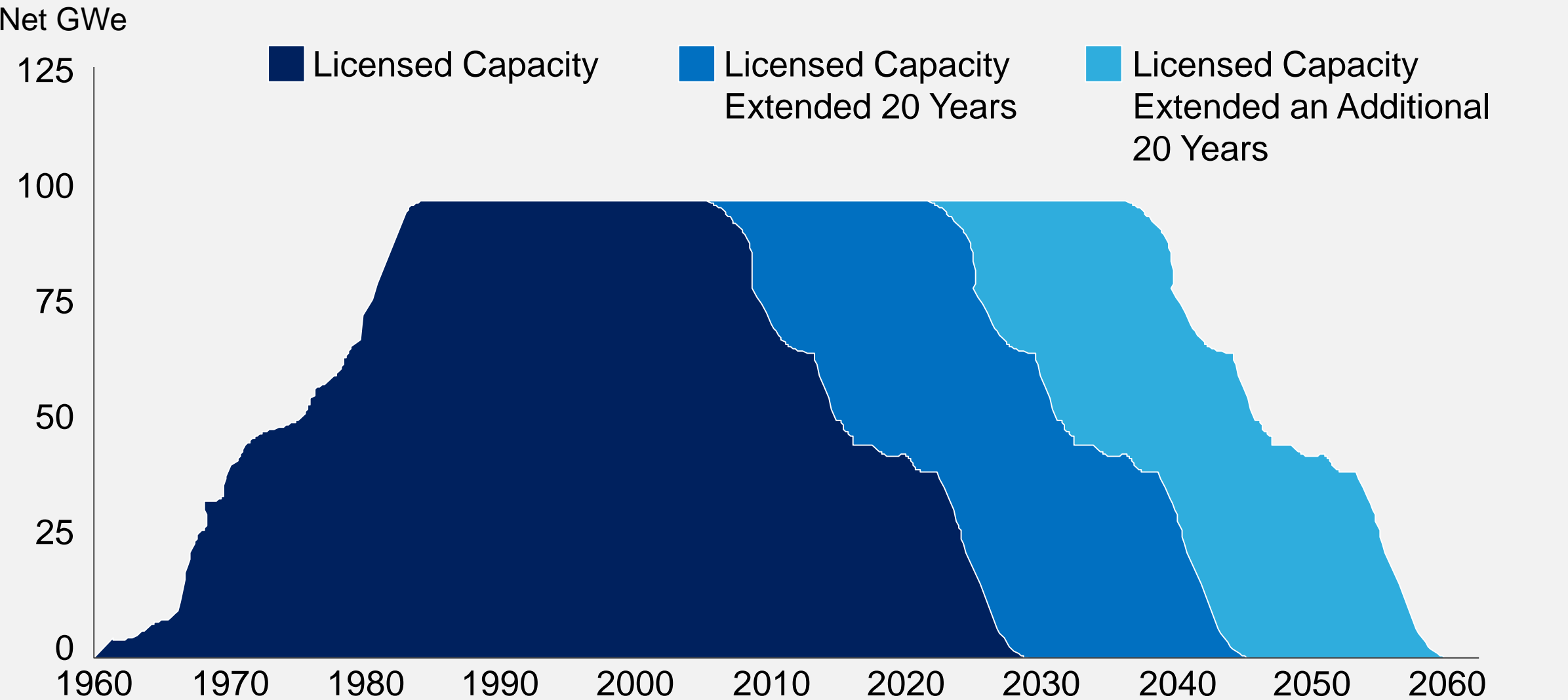


Enable
the deployment of
advanced nuclear
technologies



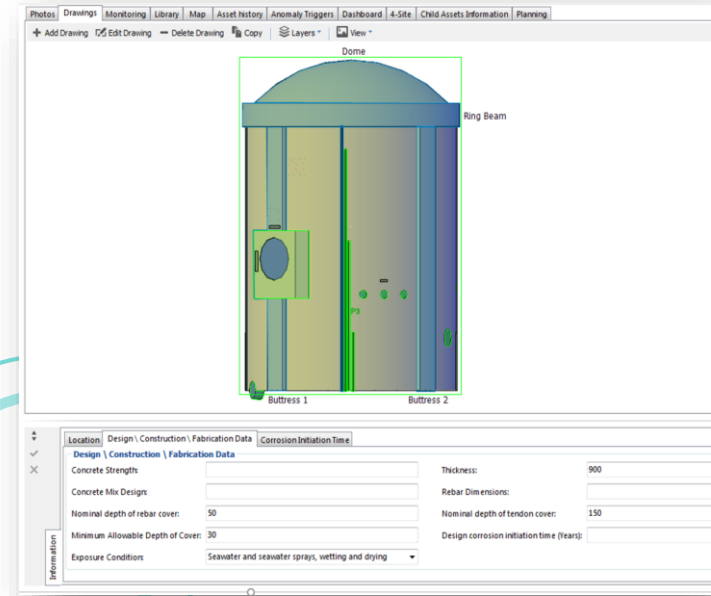
Assess
long-term
sustainability of
nuclear energy

U.S. Nuclear Generating Capacity

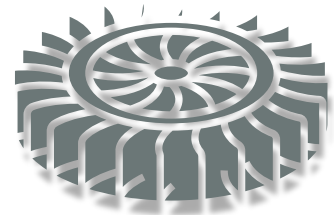
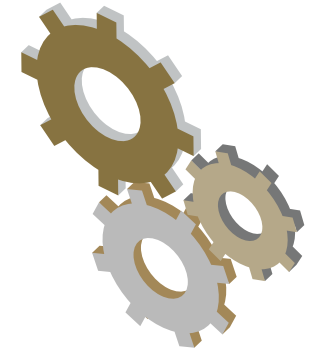
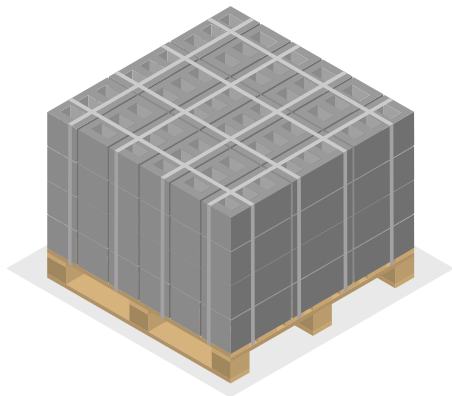
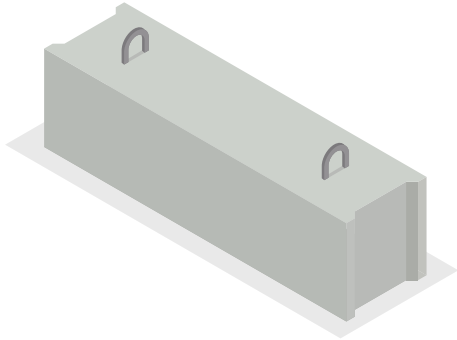
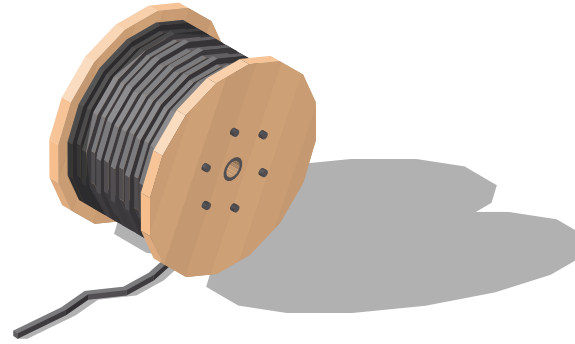
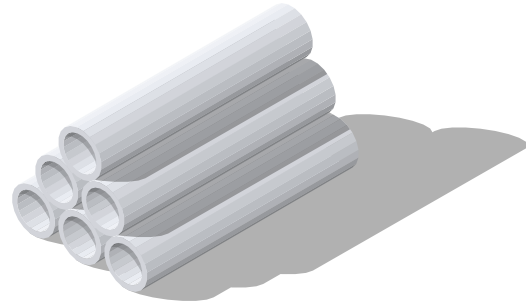


Source: NRC

Keeping the current fleet operating



Enabling life beyond 60 years of operations



Value Based Maintenance



THE GOAL: Establish the right equipment reliability for the right cost



Plant Modernization

Enabling technologies & approaches



Wireless Connectivity
/ Electromagnetic
Compatibility



Digital Upgrades
(including
cybersecurity)



Risk-Informed
Engineering &
Decision-Making

Immediate applications to save costs



Condition Based
Equipment
Maintenance



Integrated
Monitoring &
Diagnostics



Mobile Work
Execution



Automated
Chemistry
Monitoring

Future applications to save costs



Radiation
Monitoring



Structural
Health
Monitoring



Physical
Security



Emergency
Planning

Future enabling technologies & approaches



Data Analytics /
Artificial
Intelligence



CIM
Common
Information
Model

2018
Early R&D

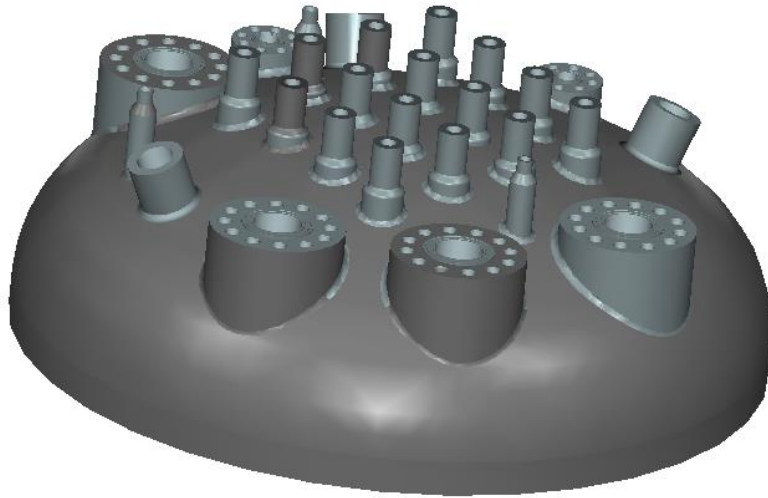
2019
Feasibility

2020
Methods

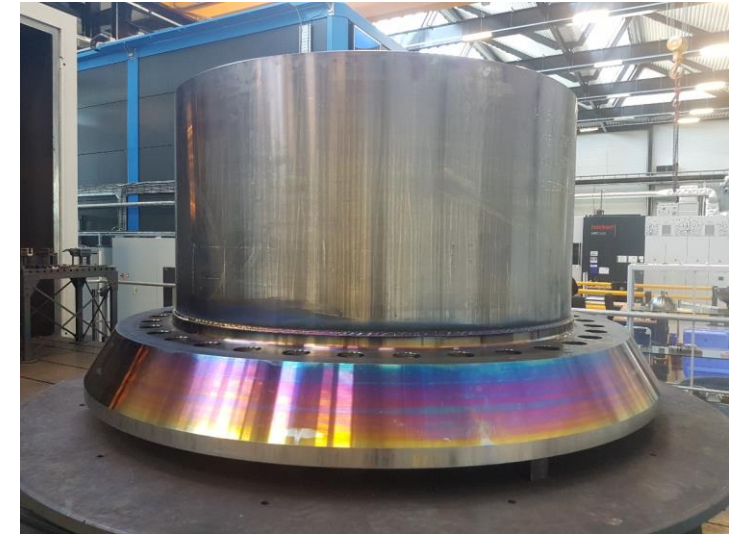
2021
Deployment



Advanced Manufacturing



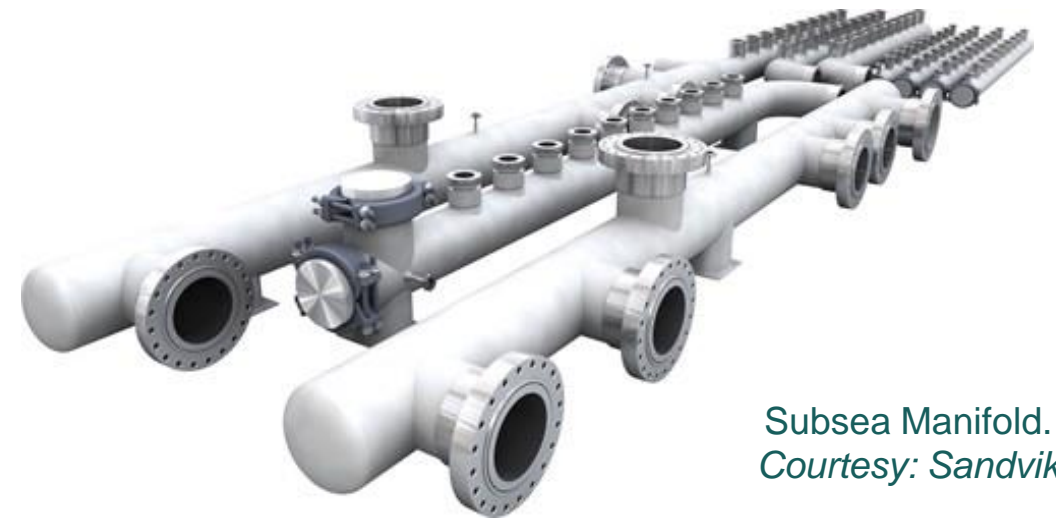
Photographs courtesy of EPRI and NuScale Power



Lower Flange Shell Mockup EB Weld -- ~6 ft
(1.82m) diameter (mockup is upside down)
Completed in 47 minutes



Diode Laser Cladding
equipment setup
(courtesy of N-ARMC)



Subsea Manifold.
Courtesy: Sandvik

Key Interfaces



INDUSTRY COLLABORATION
STRATEGIC ALIGNMENT
ACTIVE ENGAGEMENT
FREQUENT COMMUNICATIONS



Together...Shaping the Future of Electricity